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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/731,252

12/09/2003

Motomu Hashizume

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6341

23494

7590

03/17/2006

TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

DAVIDSON, DAN

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/731,252

**Applicant(s)**

HASHIZUME ET AL.

**Examiner**

Dan I. Davidson

**Art Unit**

2651

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 6-9 is/are allowed.
- 6) ☒ Claim(s) 4, 5 and 10-15 is/are rejected.
- 7) ☒ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The amendment filed December 21, 2005 has been received and has been made of record. An Office Action in response to the above amendment follows. Since this Action contains new rejections not necessitated by amendment, this Action will not be final.

#### ***Claim Objections***

2. Claims 4 and 10 are objected to because of the following informalities:

(1) There is a typographical error in the formula provided for  $V_h$ . The second closing parentheses after  $R_o$  should be a division symbol. Appropriate correction is required.

(2) Claims 4 and 10 for all practical purposes contain the same limitations.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 4 and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claims 4 and 10; the phrase "may be" at claim 4, line 8 and at claim 10, line 7 is indefinite. It should be replaced with --is--.

Re claims 12-15; the limitations at these claims correspond to Figures 3-6, respectively. Yet, they impermissibly depend from claim 10, which lists an equation that only corresponds to Figure 2 and not to Figures 3-6.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 4-5 and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Ngo (US 7,006,313 B2)

The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Ngo discloses an impedance-controlled write driver circuit comprising: a write head (Fig. 1, 108) operably coupled to a flexible printed circuit, the flexible printed circuit having two opposing terminals for external coupling (Fig. 1, 106); a symmetrical pair of matched impedance control circuits, each coupled between an opposing terminal of the flexible printed control circuit and a write driver circuit ground (Fig. 1, R0, R1), wherein the matched impedance controlled circuits each further comprise a resistor having a resistance value of about  $R_0/2$ , wherein  $R_0$  represents a selected internal reference

Art Unit: 2651

resistor (note that the transmission line impedance is  $Z_d$  and each of the resistances  $R_0$  and  $R_1$  is  $Z_d/2$ ). Furthermore, the circuit of Figure 1 satisfies the equation at claim 4.

7. Claims 4-5 and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Venca et al (US 6,970,316 B2).

Venca et al disclose an impedance-controlled write driver circuit comprising: a write head (Fig. 3, 42) operably coupled to a flexible printed circuit, the flexible printed circuit having two opposing terminals for external coupling (Fig. 3, 42A-B); a symmetrical pair of matched impedance control circuits, each coupled between an opposing terminal of the flexible printed control circuit and a write driver circuit ground (Fig. 3, 130-31), wherein the matched impedance controlled circuits each further comprise a resistor having a resistance value of about  $R_0/2$ , wherein  $R_0$  represents a selected internal reference resistor (col. 7, lines 21-25; if the impedance of the lines on both sides of the write head is equal, the resistances will be equal). Furthermore, the circuit of Figure 3 satisfies the equation at claim 4 (assuming the impedance of the lines on both sides of the head is equal).

***Allowable Subject Matter***

8. Claims 2 and 6-9 are allowed over the prior art of record.

Re claim 2; the prior art of record fails to teach or suggest a step of linking the opposing terminals with a capacitor for minimizing DC current loss.

Re claim 6; the prior art of record, and in particular Takahashi (US 6,947,239 B2), fails to teach or suggest a second resistor coupled to the second terminal of the

Art Unit: 2651

capacitor in parallel with the first resistor, the second resistor having a resistance value of about  $R_{dc}/2$ , wherein  $R_{dc}$  represents a DC resistance.

Re claim 7; the prior art of record fails to teach or suggest a first resistor, having a resistance value of about  $R_o$ , in series with a capacitor, coupled between the two FPC terminals; wherein the matched impedance control circuits each further comprise a second resistor having a resistance value of about  $R_{dc}/2$ ; wherein  $R_o$  represents a selected internal reference resistance; and  $R_{dc}$  represents a DC resistance of the impedance control circuit.

Re claim 8; the prior art of record fails to teach or suggest a first resistor, having a resistance value of about  $R_o$  in series with a capacitor, coupled between the two FPC terminals, the path between the first resistor and capacitor further comprising a switch; wherein the matched impedance control circuits each further comprise a second resistor having a resistance value of about  $R_{dc}/2$ ; wherein  $R_o$  represents a selected internal reference resistance; and  $R_{dc}$  represents a DC resistance of the impedance control circuit.

Re claim 9; the prior art of record fails to teach or suggest a capacitor, coupled between the two flexible printed circuit terminals; wherein the matched impedance control circuits each further comprise a resistor having a resistance value of about  $R_o/2$  having a second terminal coupled to the capacitor, wherein  $R_o$  represents a selected internal reference resistance; and a diode coupled between the second terminal of the resistor and ground.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takahashi (US 6,947,239 B2) teaches a write driver circuit having matched impedance control circuits, each impedance control circuit comprising a resistor and a capacitor.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I. Davidson whose telephone number is (571) 272-7552. The examiner can normally be reached on Monday-Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea L. Wellington, can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/731,252


Page 7

Art Unit: 2651

DID

Dan I Davidson

March 9, 2006



WAYNE YOUNG  
SUPERVISORY PATENT EXAMINER